

A

Please type a plus sign (+) inside this box  $\rightarrow$

PTO/SB/05 (11-00)  
Approved for use through 10/31/2002. OMB 0651-0032

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**UTILITY  
PATENT APPLICATION  
TRANSMITTAL**

*(Only for new nonprovisional applications under 37 CFR 1.53(b))*

Attorney Docket No.	41003.P037
First Inventor	Jeffrey G. Ort
Title	A Multi-Plane Metaphoric Desktop User Interface and Methods of Op
Express Mail Label No.	EL605443112US

## APPLICATION ELEMENTS

*See MPEP chapter 600 concerning utility patent application contents.*

ADDRESS TO: Assistant Commissioner for Patents  
Box Patent Application  
Washington, DC 20231

1. ☒ Fee Transmittal Form (e.g., PTO/SB/17)  
(Submit an original and a duplicate for fee processing)
2. ☒ Applicant claims small entity status.  
See 37 CFR 1.27.
3. ☒ Specification [Total Pages 23]  
(preferred arrangement set forth below)
- Descriptive title of the invention
  - Cross Reference to Related Applications
  - Statement Regarding Fed sponsored R & D
  - Reference to sequence listing, a table,  
or a computer program listing appendix
  - Background of the Invention
  - Brief Summary of the Invention
  - Brief Description of the Drawings (if filed)
  - Detailed Description
  - Claim(s)
  - Abstract of the Disclosure
4. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 1]
5. Oath or Declaration [Total Pages ]
- a. ☒ Newly executed (original or copy)
- b. ☐ Copy from a prior application (37 CFR 1.63 (d))  
(for continuation/divisional with Box 18 complete)
- i. ☐ DELETION OF INVENTOR(S)  
Signed statement attached deleting inventor(s)  
named in the prior application, see 37 CFR  
1.63(d)(2) and 1.33(b).
6. ☐ Application Data Sheet. See 37 CFR 1.76

7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (*Appendix*)
8. Nucleotide and/or Amino Acid Sequence Submission (*if applicable, all necessary*)
- a. ☐ Computer Readable Form (CRF)
- b. Specification Sequence Listing on:
- i. ☐ CD-ROM or CD-R (2 copies); or
- ii. ☐ paper
- c. ☐ Statements verifying identity of above copies

### ACCOMPANYING APPLICATION PARTS

9. ☒ Assignment Papers (cover sheet & document(s))
10. ☐ 37 CFR 3.73(b) Statement ☒ Power of Attorney  
(when there is an assignee)
11. ☐ English Translation Document (if applicable)
12. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
13. ☐ Preliminary Amendment
14. ☒ Return Receipt Postcard (MPEP 503)  
(Should be specifically itemized)
15. ☐ Certified Copy of Priority Document(s)  
(if foreign priority is claimed)
16. ☐ Request and Certification under 35 U.S.C. 122  
(b)(2)(B)(i). Applicant must attach form PTO/SB/35  
or its equivalent.
17. ☐ Other: .....

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No. \_\_\_\_\_ / \_\_\_\_\_


Prior application information: Examiner \_\_\_\_\_ Group Art Unit: \_\_\_\_\_

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

## 19. CORRESPONDENCE ADDRESS

☐ Customer Number or Bar Code Label **000025943** or ☐ Correspondence address below  
(Insert Customer No. or Attach bar code label here)

Name	COLUMBIA IP LAW GROUP, LLC					
	4900 SW Meadows Road					
Address	Suite 109					
City	Lake Oswego		State	Oregon	Zip Code	97035
Country	USA		Telephone	503-534-2800	Fax	503-534-2800

Name (Print/Type)	Aloysius T.C. AuYeung	Registration No. (Attorney/Agent)	35,432
Signature		Date	11/20/00

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231.

# FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT (\$ 431.00

## Complete if Known

Application Number	Not yet assigned
Filing Date	November 20, 2000
First Named Inventor	Jeffrey G. Ort
Examiner Name	Not yet assigned
Group Art Unit	Not yet assigned
Attorney Docket No.	41003.P037

PC841 U.S. PTO  
09/18870  
11/20/00

## METHOD OF PAYMENT

1. ☒ The Commissioner is hereby authorized to charge ~~in excess of~~ credit any overpayments to:
- Deposit Account Number: 501569
- Deposit Account Name: Columbia IP Law Group, LLC
- ☒ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17
- ☒ Applicant claims small entity status. See 37 CFR 1.27
2. ☒ Payment Enclosed:
- ☒ Check ☐ Credit card ☐ Money Order ☐ Other

## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
101 710	201 355	Utility filing fee	355.00
106 320	206 160	Design filing fee	
107 490	207 245	Plant filing fee	
108 710	208 355	Reissue filing fee	
114 150	214 75	Provisional filing fee	
SUBTOTAL (1)			(\$ 355.00

### 2. EXTRA CLAIM FEES

Total Claims: 24 -20\*\* = 4 x 9.00 = 36.00

Independent Claims: 3 -3\*\* = 0 x 40.00 = 0.00

Multiple Dependent: =

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
103 18	203 9	Claims in excess of 20
102 80	202 40	Independent claims in excess of 3
104 270	204 135	Multiple dependent claim, if not paid
109 80	209 40	** Reissue independent claims over original patent
110 18	210 9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$ 36.00

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
105 130	205 65	Surcharge - late filing fee or oath	
127 50	227 25	Surcharge - late provisional filing fee or cover sheet	
139 130	139 130	Non-English specification	
147 2,520	147 2,520	For filing a request for ex parte reexamination	
112 920*	112 920*	Requesting publication of SIR prior to Examiner action	
113 1,840*	113 1,840*	Requesting publication of SIR after Examiner action	
115 110	215 55	Extension for reply within first month	
116 390	216 195	Extension for reply within second month	
117 890	217 445	Extension for reply within third month	
118 1,390	218 695	Extension for reply within fourth month	
128 1,890	228 945	Extension for reply within fifth month	
119 310	219 155	Notice of Appeal	
120 310	220 155	Filing a brief in support of an appeal	
121 270	221 135	Request for oral hearing	
138 1,510	138 1,510	Petition to institute a public use proceeding	
140 110	240 55	Petition to revive - unavoidable	
141 1,240	241 620	Petition to revive - unintentional	
142 1,240	242 620	Utility issue fee (or reissue)	
143 440	243 220	Design issue fee	
144 600	244 300	Plant issue fee	
122 130	122 130	Petitions to the Commissioner	
123 130	123 130	Petitions related to provisional applications	
126 180	126 180	Submission of Information Disclosure Stmt	
581 40	581 40	Recording each patent assignment per property (times number of properties)	40.00
146 710	246 355	Filing a submission after final rejection (37 CFR § 1.129(a))	
149 710	249 355	For each additional invention to be examined (37 CFR § 1.129(b))	
179 710	279 355	Request for Continued Examination (RCE)	
169 900	169 900	Request for expedited examination of a design application	
Other fee (specify)			

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 40.00

## SUBMITTED BY

Name (Print/Type)	Aloysius T.C. AuYeung	Registration No. (Attorney/Agent)	35,432	Telephone	503-534-2800
Signature		Date	11/20/00		

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

[illegible]

FOR

Inventor(s):  
**Jeffrey G. Ort**  
**Eric Engstrom**

COLUMBIA IP LAW GROUP, LLC

"Express Mail" label number: EL605443112US

## BACKGROUND OF THE INVENTION

## 1. Field of the Invention

10 2. Background Information

15 In a single plane metaphoric desktop, various icons are provided to represent  
the user's computer, the user's network neighborhood, mapped devices, installed  
programs, file/document folders, the files/documents themselves, and so forth. A  
user would access the various resources, files and documents by interacting with  
the icons, as one would interface with various objects in one's desktop in the  
20 physical world.

25 The execution results or contents provided by the applications are rendered or displayed in their corresponding display windows. Under the prior art single plane

metaphoric desktop GUI, no distinctions are made between rendering the execution results or provided contents of “locally” executed applications, and remotely executed “on-line” applications.

5 With advances in integrated circuit, microprocessor, networking and communication technologies, increasing number of devices, in particular, digital computing devices, are being “networked” together, via persistent wire line or wireless networking connections as well as dial up connections. As a result, more and more network dependent applications are deployed, including emails, e-commerce, and the earlier mentioned world wide web. Further, the provided  
10 contents have gone from mundane textual contents to rich multi-media contents. At the same time, as the affordability of these network enabled devices continue to improve, more and more novice users are now going “on-line”.

Thus, further enhancements to the present GUI that provide even greater user experience, especially for the content rich execution results of the on-line  
15 applications, are desired.

#### SUMMARY OF THE INVENTION

20 A computing device is provided with a number of programming instructions to cause display of first execution results of a first set of applications in a first plane of a metaphoric desktop, and display of second execution results of a second set of applications in a second plane of the metaphoric desktop. In one embodiment, the programming instructions are further designed to morph the metaphoric desktop  
25 from one plane to another. In one embodiment, the second set of applications are on-line applications, and the programming instructions are designed to cause the

5

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references denote similar elements, and in which:

10

15

20

25

**Figures 7a-7b** illustrate the operational flow of the relevant aspects of the local agent of **Fig. 5**, in accordance with one embodiment; and

**Figure 8** illustrates an architectural view of an example computer system suitable for practicing the present invention, in accordance with one embodiment.

5 DETAILED DESCRIPTION OF THE INVENTION

In the following description, various aspects of the present invention will be described. However, it will be apparent to those skilled in the art that the present invention may be practiced with only some or all aspects of the present invention.

10 For purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding of the present invention. However, it will also be apparent to one skilled in the art that the present invention may be practiced without the specific details. In other instances, well known features are omitted or simplified in order not to obscure the present invention.

15 Parts of the description will be presented using terms such as end-user interfaces, buttons, and so forth, commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. Parts of the description will be presented in terms of operations performed by a computing device, using terms such as monitoring, intercepting, copying, saving, replacing, and so forth. As  
20 well understood by those skilled in the art, these quantities and operations take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated through mechanical and electrical components of a digital system. The term digital system includes general purpose as well as special purpose computing machines, systems, and the like, that are standalone,  
25 adjunct or embedded.

Various operations will be described in turn in a manner that is most helpful in understanding the present invention, however, the order of description should not be construed as to imply that these operations are necessarily order dependent. Furthermore, the phrase “in one embodiment” will be used repeatedly, however the phrase does not necessarily refer to the same embodiment, although it may.

### Overview of Applications

Referring now to **Figures 1a-1c**, wherein three block diagrams illustrating an end user view of the present invention, in accordance with one embodiment, are shown. Illustrated in **Fig. 1a** is an end user view of first plane **102a** of multi-plane metaphoric desktop graphical user interface (GUI) **100** of the present invention. For the example illustration, illustrated first plane **102a** is the front face of the metaphoric desktop GUI **100**. Within each plane, such as illustrated front face **102a**, metaphoric desktop GUI **100** is operated substantially as the prior art single plane metaphoric desktop GUI. Various icons, such as icons **104a-104b** are displayed to represent various resources available on the host system, such as devices, shortcuts, folders, programs, files, documents, and so forth. Additionally, various display windows, such as display windows **106a-106b**, are rendered to display the execution results of a number of applications being concurrently executed. However, in accordance with the present invention, the execution results of the applications displayed within the display windows of a plane of the multi-plane metaphoric desktop GUI of the present invention are type based. That is, under the present invention, the applications are typed, and their execution results are displayed in display windows of different planes of multi-plane metaphoric desktop GUI **100** of the present invention in accordance with their types. In one two-plane embodiment, also referred to as a front and back face embodiment, applications are divided into two



types. “Locally” executed applications are considered as one type, and “on-line” applications are considered as another type.

For the purpose of this application, the terms “local” (or “locally”) and “on-line” are used in a general non-definitive manner, as shorthand labels to contrast two types of applications for convenience. What constitute “local” or “on-line” applications are application dependent, and may vary from one embodiment to another. In one embodiment, applications offered through the world wide web are considered “on-line” applications, as users generally perceive accessing one of these applications as going “on-line”, and all other applications are considered “local” applications, including e.g. applications executing on a remote server coupled to the host computer through a local or even wide area network. Also, for ease of understanding, only two icons and windows are shown, and other typical GUI features are omitted from **Fig. 1a-1c**.

Continuing with **Figs. 1-3**, in accordance with the present invention, under pre-determined conditions, to be described more fully below, multi-plane metaphoric desktop **100** would morph itself from a current visible plane, such as front face **102a** (illustrated by **Fig. 1b**), to a second plane, such as back face **102b**, where a number of display windows, such as display windows **108a** and **108b**, are rendered to display execution results of a number of “on-line” applications concurrently being executed, such as contents served up by a number of web servers (illustrated by **Fig. 1c**). For the illustrated embodiment, the morphing of multi-plane metaphoric desktop **100** is conveyed by animating a rotation over diagonal axis D-D.

Thus, under the present invention, a more dramatic experience may be provided to a user, when the user switches from applications of one type to another, e.g. when the user goes from “local” applications to “on-line” applications, or when the user goes back from “on-line” application to “local” applications.

**Figures 2a-2b** illustrate two alternate embodiments for animating the morphing of multi-plane desktop **100** of the present invention. More specifically, **Fig. 2a** illustrates conveying of the morphing by animating a rotation over horizontal axis X-X, whereas **Fig. 2b** illustrates conveying of the morphing by animating a rotation over vertical axis Y-Y.

**Figures 3a-3b** illustrate another two alternate embodiments for animating the morphing of multi-plane desktop **100** of the present invention. More specifically, **Fig. 3a** illustrates conveying of the morphing by animating a number of simultaneous rotations of different portions of desktop **100** over a number of corresponding horizontal axes X1-X3, whereas **Fig. 3b** illustrates conveying of the morphing by animating a number of simultaneous rotations of different portions of desktop **100** over a number of vertical axes Y1-Y3.

Obviously, the number of portions and axes employed are for illustrative purpose only. The present invention may be practiced with more or less portions/axes. In fact, the present invention may be practiced with other types of morphing when switching from a current visible plane to another plane, making the other plane the current visible plane.

#### Method

**Figure 4a-4b** illustrate a method view of the present invention, in accordance with one embodiment. As illustrated, at block **402**, one plane or face of the multi-plane metaphoric desktop GUI, e.g. the front face, is "selected" as the current visible plane/face. At block **402**, execution results of the applications of the type corresponding to the plane/face selected to be the current visible plane/face, e.g. "locally" executed applications, are rendered in the corresponding display windows in the plane/face. At block **406**, it is determined whether certain plane/face

switching events have been detected, e.g. the user going "online". If not, the process returns to block **404**. Eventually, when one such event is detected, the process continues at block **408**.

As illustrated, at block **408**, a second plane/face, e.g. the back face, is  
5 selected to be current visible plane/face. At block **410**, the execution results of the applications of the type corresponding to the newly selected current visible plane/face, e.g. "online" applications, are additionally rendered and displayed in their corresponding display windows within the current visible plane/face. At block **412**, a series of animation operations, e.g. rotation over a selected axis, are performed to  
10 provide the user with the perception of the desktop GUI morphing from the first plane/face to the second plane/face.

Thereafter, the process continues at block **414**, where once again plan/face switching events, such as the user going offline/online are monitored, while the execution results of the applications of the various types are continue to be  
15 rendered in the display windows of the corresponding planes/faces, even though only the display windows of the current visible plane/face are visible. The process remains at block **414** until eventually one such plane/face switching event is detected. Upon detection of such an event, at block **416**, a new current visible plane/face is selected. At block **418**, again a series of animation operations are  
20 performed to provide the user with a perception of the desktop GUI morphing from the previously current visible plane/face to the newly selected current visible plane/face. At block **420**, the corresponding rendering of the execution results of the applications in the display windows of the corresponding planes/faces continue.

The operations of blocks **414-420** continue, until the user ends his/her current  
25 session, e.g. logging off or otherwise shutting down his/her system.

### Component View of Environment

Referring now to **Figure 5**, wherein a block diagram illustrating a component view of a system environment suitable for practicing the present invention, in accordance with one embodiment. As illustrated, system environment **500** includes operating system **504** having window manager **506**, graphics services **508** and device drivers **510**, offering a number of system services in support of applications, such as applications **502**. Among the services offered are windowing services offered by window manager **506** to facilitate concurrent display of the execution results of multiple applications **502** executing at the same time. The services also include graphics services offered by graphics services **508** to facilitate graphics rendering by the executing applications. These graphics services include high level graphics calls for rendering complex graphical objects, as well as low level "direct draw" services for rendering low level detail graphical primitives. Device drivers **510** offer various device specific services, including in particular display rendering and associated operations on the pixel value contents of the display screen memory (not shown). Further, operating system **504** includes services for notifying applications **502** of cursor events associated with the display windows of the applications, as well as automatic handling of a number of basic cursor events, e.g. "dragging" or otherwise relocating a display window.

Additionally, for the illustrated embodiment, environment **500** includes supplemental display manager **514** and local agent **516**. Supplemental display manager **514** operates to supplement window manager **506** in providing like kind of services, such as windowing services, to applications of the other types, whose execution results are to be displayed in display windows of the additional planes/faces. For the illustrated embodiment, supplemental display manager **514** effectuates provisions of the like services with the assistance of local agent **512** (the

other applications are assumed to be remote “on-line” applications). Similar to window manager **506**, supplemental display manager **514** also uses the graphics services and device services offered by graphics services **508** and device drivers **510** respectively.

5 Window manager **506**, graphics services **508**, device driver **510** and the services they offer are known in the art. The essential aspects of the supplemental display manager **514** and local agent **512** will be further described in turn below.

### Supplemental Display Manager

10 **Figure 6a-6c** illustrate the operational flow of the relevant aspects of supplemental display manager **514** of the **Fig. 5**, in accordance with one embodiment. As illustrated, upon initialization or set up, supplemental display manager **514** “registers” itself with operating system **504** to be notified of certain events, which are considered to be display plane/face switching events. Examples  
15 of such events include a user going on-line (as indicated e.g. by connection to a predetermined port), or going offline (as indicated e.g. by disconnection from the predetermined port). In one embodiment, certain predetermined key sequences (e.g. ctrl-s) are also considered to be display plane/face switching events. The number and exact nature of events to be considered as plane/face switching events  
20 are application dependent. More or less predetermined events may be employed.

Upon registration, as illustrated, supplemental display manager **514** awaits for notifications of the events of interest, block **604**. Upon first notified of such an event (which for the illustrated embodiment is assumed to occur while the “front” plane/face where the graphics services draw to is the current visible plane/face),  
25 supplemental display manager **514** redirects graphics services to output to a first temporary buffer instead, block **606**. That is, when requested by applications **502** to

render their execution results in their display windows, instead of requesting the device drivers **510** to output the appropriate graphics/texts to the standard display screen memory buffer (not shown), graphics services **508** would output the appropriate graphics/texts to the designated first temporary buffer.

5           Additionally, supplemental display manager **514** would begin to accept output displays of the applications of the current visible display plane/face in a second temporary buffer. For the illustrated embodiment, it is assumed that there are two display planes/faces, thus the other display plane/face by default is the next current visible plane/face. In alternate embodiments where more than 2 planes/faces are  
10           employed, any one of a number of application dependent approaches may be employed to determine which of the other planes/faces is to be selected as the next current visible plane/face, and have that other plane/face set as the current visible plane/face accordingly. Additionally, for the illustrated embodiment, the applications corresponding to the second plane/face are assumed to be “online” applications,  
15           whose outputs are received by supplemental display manager **514** though local agent **512**.

          Upon beginning acceptance of the execution results of the applications corresponding to the now current visible plane/face, supplemental display manager **514** further causes contents of the now current visible plane/face to be gradually  
20           output to the standard display screen buffer, to provide the user with the perception of the desktop morphing from the previous current visible plane/face to the new current visible plane/face. In one embodiment, the morphing perception is effectuated by performing a series of animation operations combining the contents of the screen display buffer and the second temporary buffer, to portray a rotation of  
25           the desktop over a predetermined axis, such as a diagonal, one or more horizontal/vertical axes, as described earlier, referencing **Fig. 2a-2b** and **Fig. 3a-3b**.

Thereafter, supplemental display manager **514** continues to accept execution results of the applications corresponding to the now current visible plane/face, while the graphics services would output the execution results of the applications corresponding to the previously current visible plane/face to the first temporary  
5 buffer. The contents of the previous visible plane/face are advantageously maintained (in the first temporary buffer) to ensure the multi-plane operations are transparent to the applications corresponding to the previous visible plane/face (e.g. "local" applications). Further, the contents of the previous visible plane/face may be readily available, when it is to be made to visible plane/face again.

10 Once the switching is effectuated, as illustrated, at block **614**, supplemental display manager **514** further registers with operating system **504** to be notified of all cursor events. Thereafter, at block **616**, supplemental display manager **514** awaits notifications of face switching events again. Upon notified of another display plane/face switching event, supplemental display manager **514**, at block **618** (for the  
15 illustrated embodiment), gradually outputs the contents of the first temporary buffer to the standard display screen buffer, providing the user with the perception of the desktop morphing from the second display plane/face back to the first display plane/face. Again, as described earlier, the morphing may be effectuated through a series of animation operations.

20 At block **620**, upon effectuating the desired morphing, supplemental display manager **514** redirects graphics services **508** to resume outputting the execution results of the applications corresponding to the first plane/face to the standard display screen memory again. Further, at block **622**, for the illustrated embodiment (assuming a two-plane embodiment), supplemental display manager **514** un-  
25 registers itself with operating system **504** such that it will not be notified of cursor

events again (allowing window manager **506** to resume notifying applications **502** of the first plane of associated cursor events).

Thereafter, supplemental display manager **514** continues its operations at block **604** as earlier described.

5       As illustrated in **Fig. 6c**, for the illustrated embodiment, while registered to be notified of cursor events (which is when supplemental display manager **514** causing execution results of the applications corresponding to the “second” display plane/face to be output to the display screen manager directly, and graphics services **508** has been redirected to output to the first temporary buffer), upon being  
10       notified of a cursor event, supplemental display manager **514** forwards the cursor event to the appropriate application through local agent **512**. The applications in turn handle the applicable cursor events as in the prior art.

#### Local Agent

15       **Figure 7a-7b** illustrates the operational flow of the relevant aspects of local agent **512** of the present invention, in accordance with one embodiment. As illustrated by **Fig. 7a**, upon initialization or set up, local agent **512** awaits for the graphics service requests of the applications corresponding to the alternate display planes/faces to output their execution results, block **702**. Upon requested, local  
20       agent **512** forwards the graphics service requests to supplemental display manager **514**, which in turn outputs the graphics/texts to the second temporary buffer as early described.

As to cursor events, as illustrated by **Fig. 7b**, in like manner, local agent **512** awaits notification of cursor events by supplemental display manager **514**. Upon  
25       being notified of such an event, local agent **512** forwards the cursor event to the



appropriate application, block **712**. The appropriate application may be determined in accordance with where the cursor events occurred.

#### Example Computer System

5           **Figure 8** illustrates an example computer system suitable for use to practice the present invention, in accordance with one embodiment. As shown, system **800** includes one or more processors **802** and system memory **806**. Additionally, system **800** includes mass storage devices **806** (such as diskette, hard drive, CDROM and so forth), GPIO **808** (for interfacing with I/O devices such as keyboard, cursor control and so forth) and communication interfaces **810** (such as network interface cards, modems and so forth). The elements are coupled to each other via system bus **812**, which represents one or more buses. In the case of multiple buses, they are bridged by one or more bus bridges (not shown). Each of these elements performs its conventional functions known in the art. In particular, system memory

10           **804** and mass storage **806** are employed to store a working copy **814b** and a permanent copy **814a** of the programming instructions implementing supplemental display manager **514** and/or local agent **512**. Except for its use to host the novel supplemental display manager **514** and/or local agent **512** of the present invention. The constitution of these elements **802-814** are known, and accordingly will not be

15           further described.

20

Accordingly, a multi-plane metaphoric desktop GUI, and the method of operation associated therewith have been described. It can be seen that the multi-plane metaphoric desktop of the present invention advantageously provides the user

25           with a much dramatic user experience when the user switches between applications of different types.

5

## CLAIMS

What is claimed is:

- 1 1. In an apparatus including a display, a method of operation comprising:  
2 displaying first execution results of a first plurality of applications in a first  
3 plane of a metaphoric desktop; and  
4 displaying second execution results of a second plurality of applications in a  
5 second plane of the metaphoric desktop.
- 1 2. The method of claim 1, wherein said second plurality of applications are on-  
2 line applications, and the method further comprises monitoring for the apparatus  
3 being connected on-line.
- 1 3. The method of claim 1, wherein said method further comprises morphing  
2 from said first plane of the metaphoric desktop to the second plane of the  
3 metaphoric desktop in response to detection of a predetermined event.
- 1 4. The method of claim 1, wherein said morphing comprises animating a 180  
2 degree rotation of the metaphoric desktop over a selected one of a diagonal axis, a  
3 vertical axis and a horizontal axis.
- 1 5. The method of claim 1, wherein said morphing comprises animating a  
2 plurality of 180 degree rotations of a plurality of portions of the metaphoric desktop  
3 over a selected one of a plurality of corresponding vertical axes and a plurality of  
4 corresponding horizontal axes.

1     7.     The method of claim 1, wherein

6           said displaying of second execution results of the second plurality of  
7 applications in a second plane of the metaphoric desktop comprises redirecting said  
8 graphics service to store pictorial representations of said first execution results of  
9 said first plurality of applications to an alternate display screen buffer, and storing  
10 pictorial representations of said second execution results of said second plurality of  
11 applications into said standard display screen buffer.

1 14. The apparatus of claim 11, wherein said programming instructions are  
2 designed to effectuate said morphing by animating a 180 degree rotation of the

1     15.     The apparatus of claim 11, wherein said programming instructions are  
2     designed to effectuate said morphing by animating a plurality of 180 degree  
3     rotations of a plurality of portions of the metaphoric desktop over a selected one of a  
4     plurality of corresponding vertical axes and a plurality of corresponding horizontal  
5     axes.

1 17. The apparatus of claim 1, wherein said programming instructions are  
2 designed to effectuate  
3 said displaying of first execution results of the first plurality of applications in a  
4 first plane of a metaphoric desktop by storing pictorial representations of said first  
5 execution results into a standard display screen buffer by a graphics services, and  
6 said displaying of second execution results of the second plurality of  
7 applications in a second plane of the metaphoric desktop by redirecting said  
8 graphics service to store pictorial representations of said first execution results of  
9 said first plurality of applications to an alternate display screen buffer, and storing  
10 pictorial representations of said second execution results of said second plurality of  
11 applications into said standard display screen buffer.

Ort et al – A Multi-Plane Metaphoric Desktop GUI &amp; Methods of Operation ...

1 19. The apparatus of claim 18, wherein the programming instructions are further  
2 designed to resume said storing of pictorial representations of said first execution  
3 results of said first plurality of applications to said standard display screen buffer by  
4 said graphics service.

21. A graphical user interface comprising:  
a metaphoric desktop having a first and a second plane;  
the first plane being used to display execution results of a first plurality of  
applications; and  
the second plane being used to display execution results of a second plurality  
of applications.

Ort et al – A Multi-Plane Metaphoric Desktop GUI &amp; Methods of Operation ...

1     24.     The graphical user interface of claim 21, wherein said morphing comprises a  
2     plurality of 180 degree rotations of a plurality of portions of the metaphoric desktop  
3     over a selected one of a plurality of corresponding vertical axes and a plurality of  
4     corresponding horizontal axes.

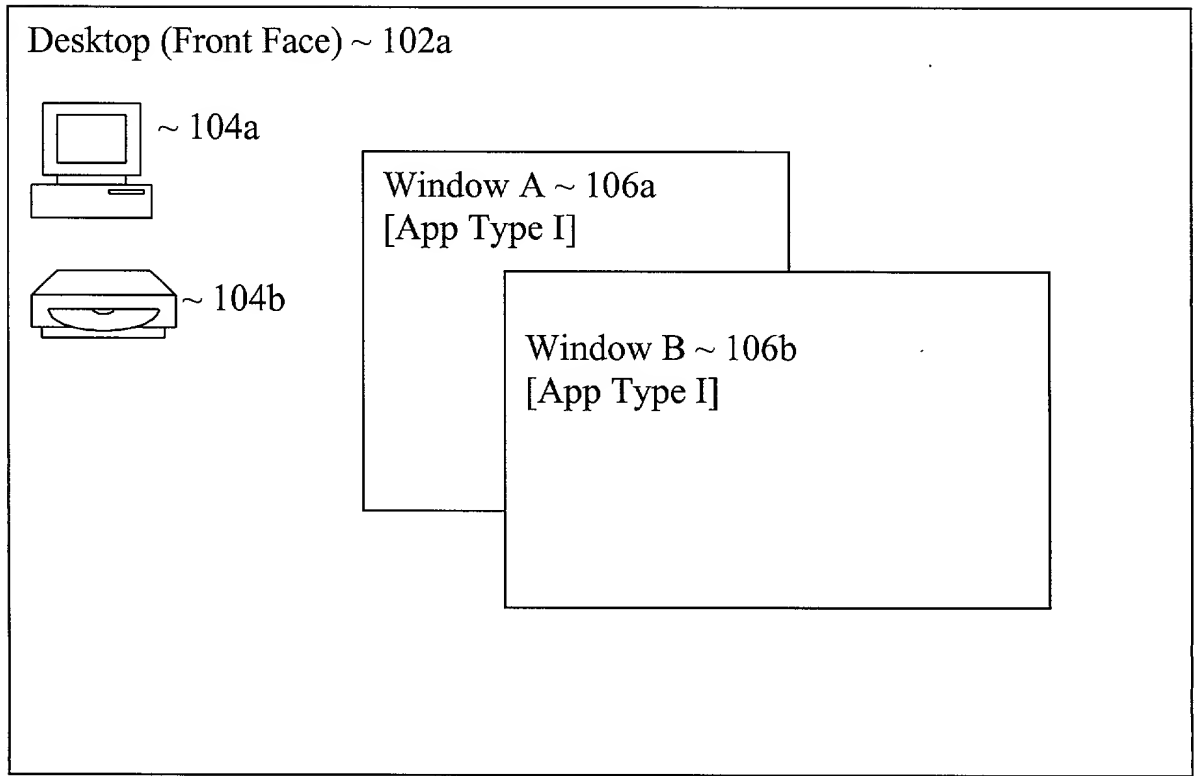


## ABSTRACT OF THE DISCLOSURE

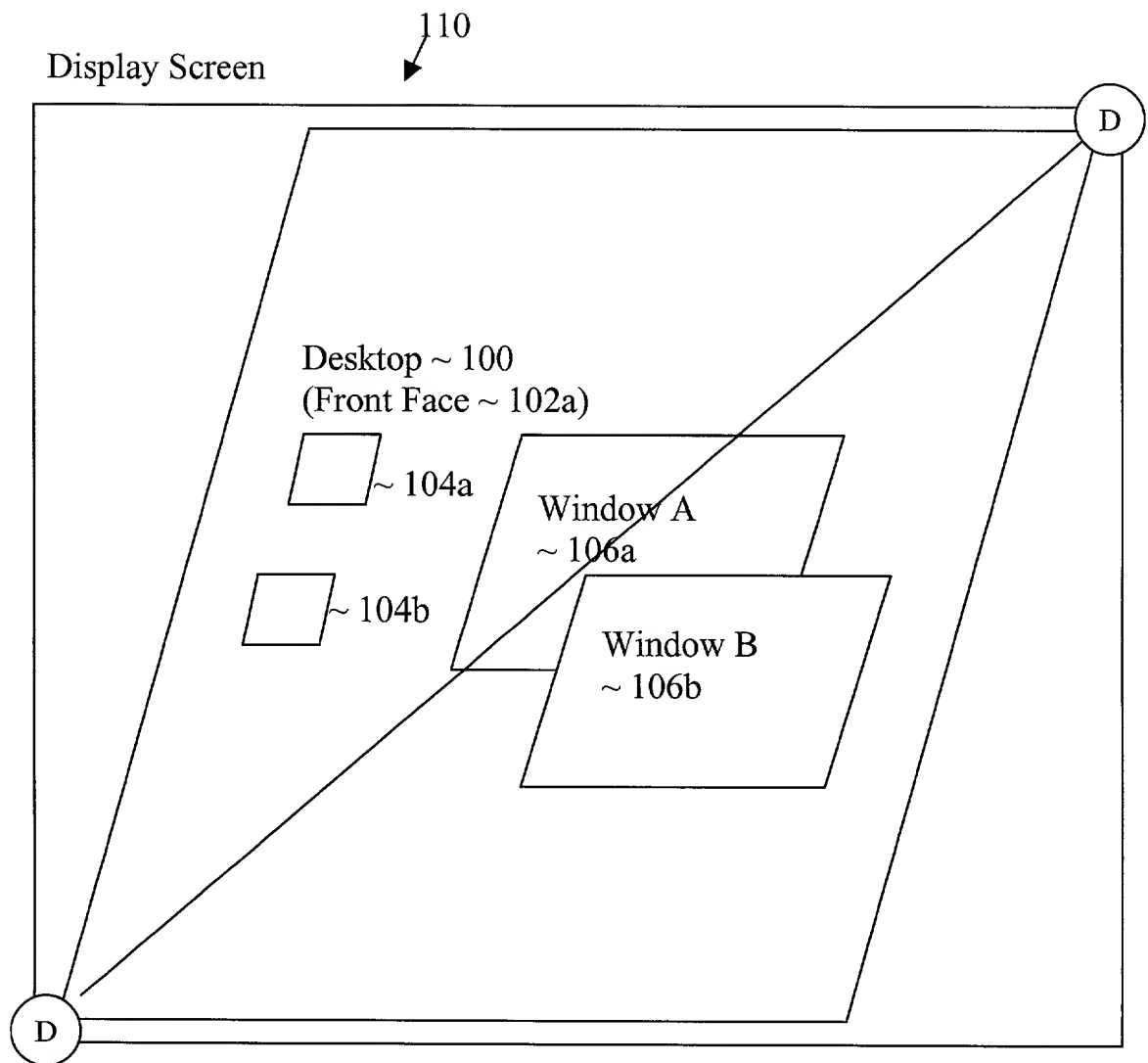
5 A computing device is provided with a number of programming instructions to  
cause display of first execution results of a first set of applications in a first plane of  
a metaphoric desktop, and display of second execution results of a second set of  
applications in a second plane of the metaphoric desktop. In one embodiment, the  
programming instructions are further designed to morph the metaphoric desktop  
from one plane to another. In one embodiment, the second set of applications are  
10 on-line applications, and the programming instructions are designed to cause the  
metaphoric desktop to morph from the first plane to the second plane when the  
computing device is being connected on line; and cause the metaphoric desktop to  
morph back to the first plane in response to a user request to return to the first  
plane.

15

100



**Figure 1a**



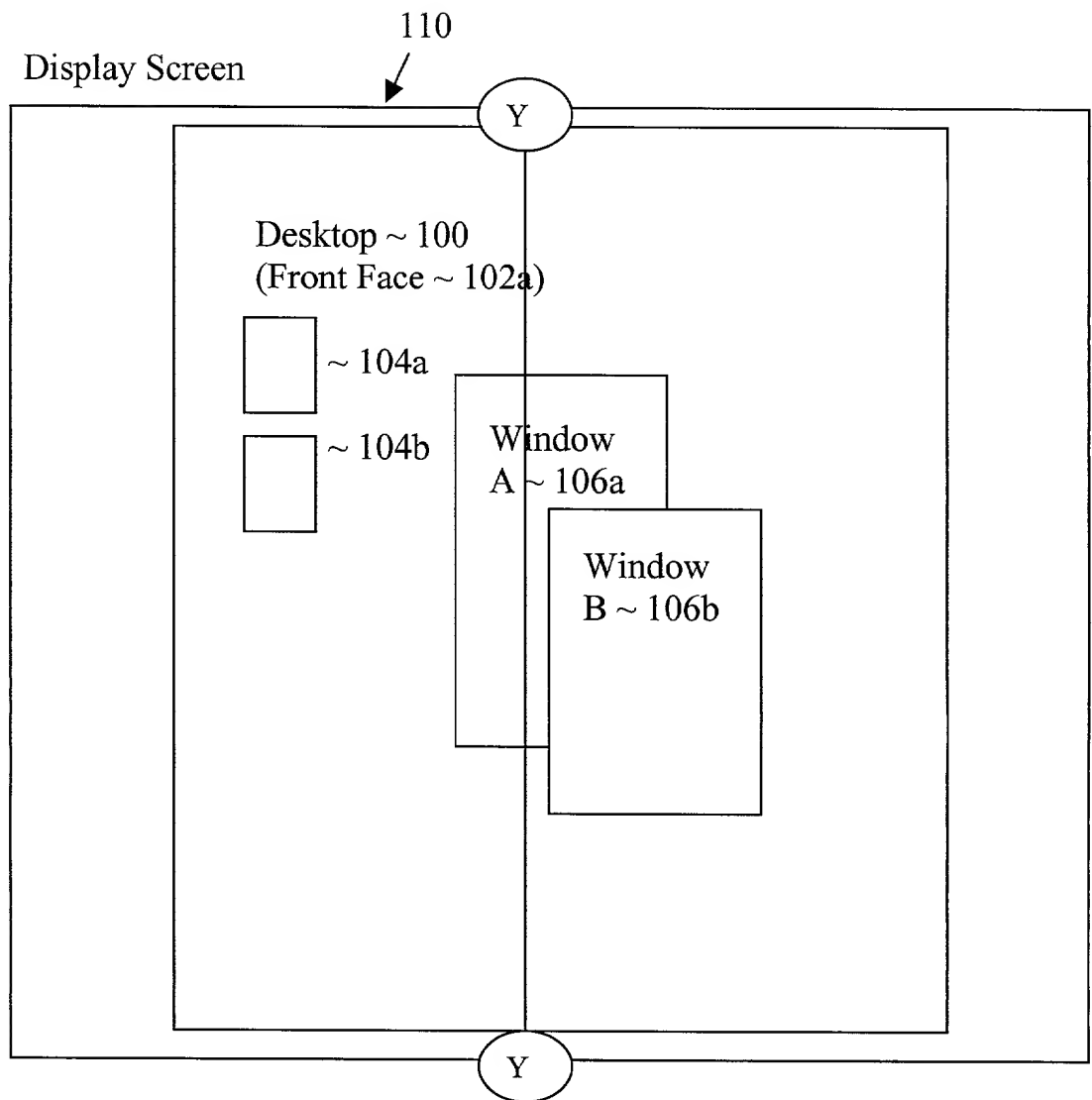
**Figure 1b**



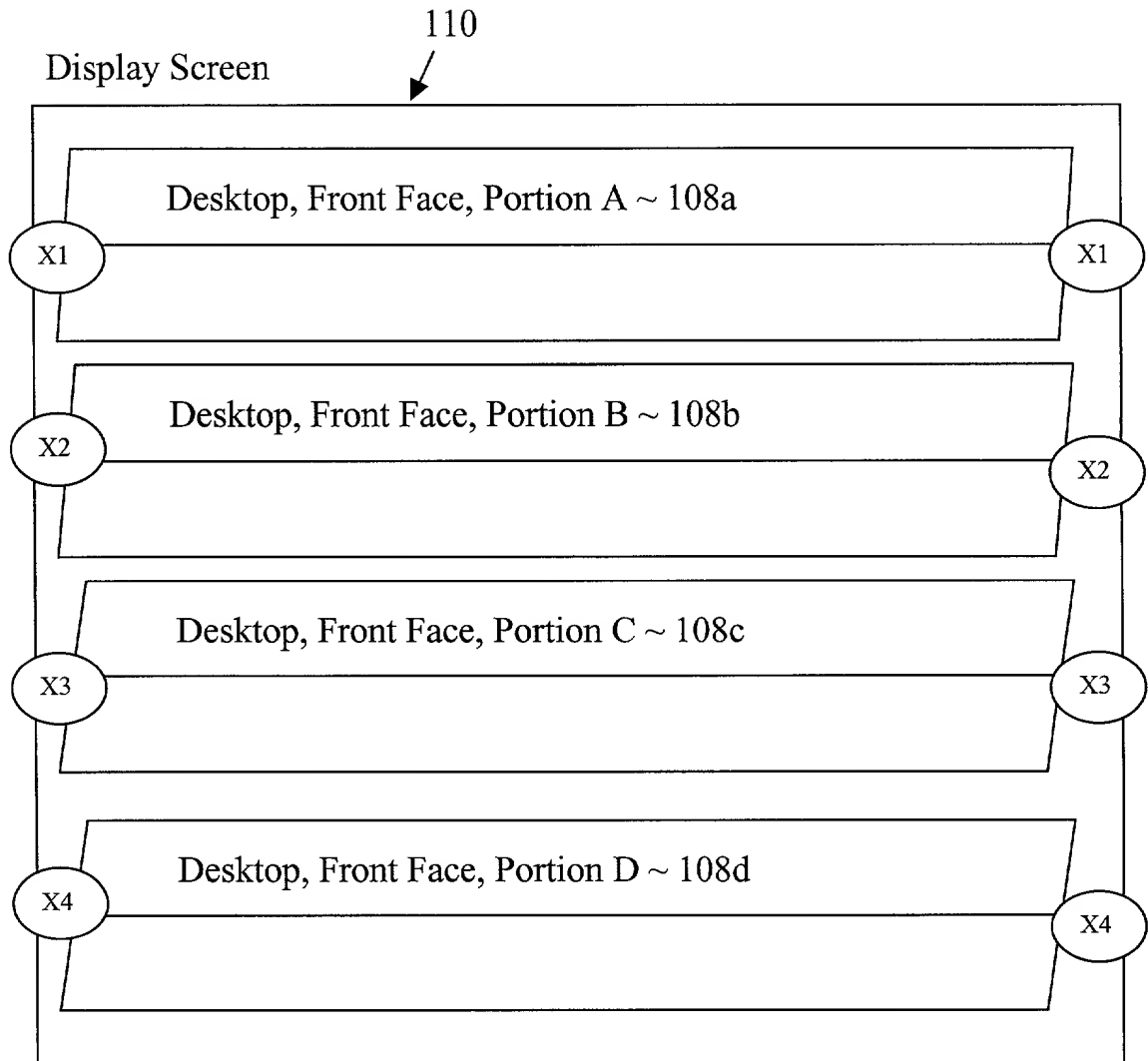
**Figure 1c**

**Figure 2a**

000211 02851250

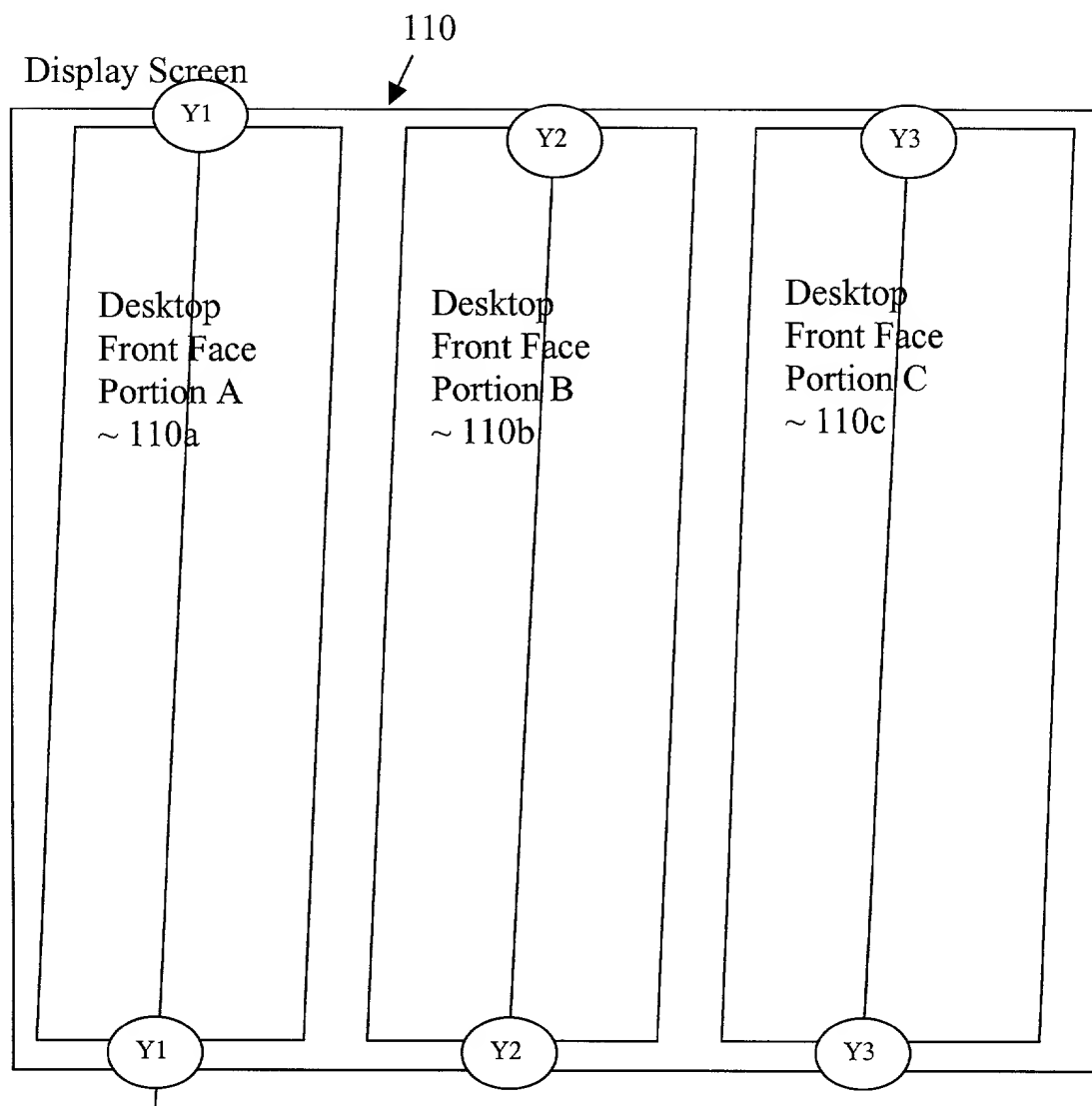


**Figure 2b**



**Figure 3a**

0974890-1.0000



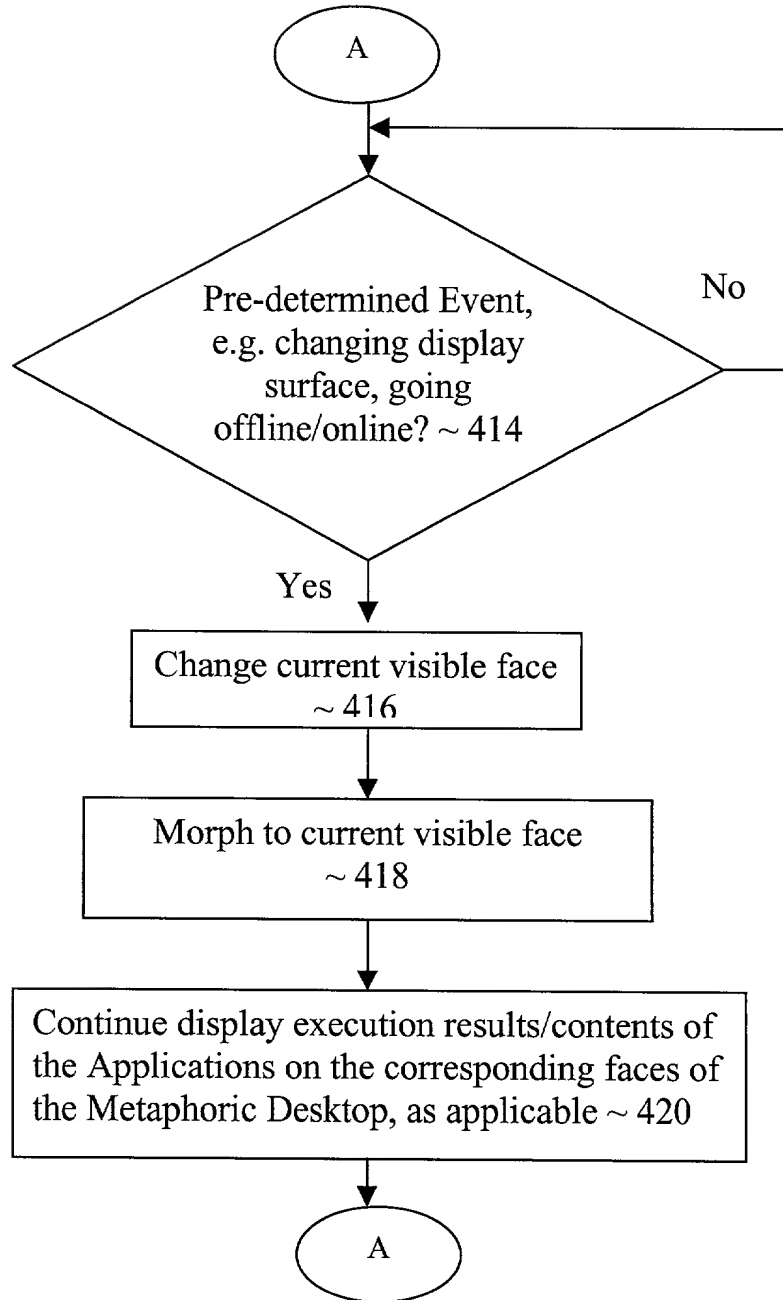
**Figure 3b**



```

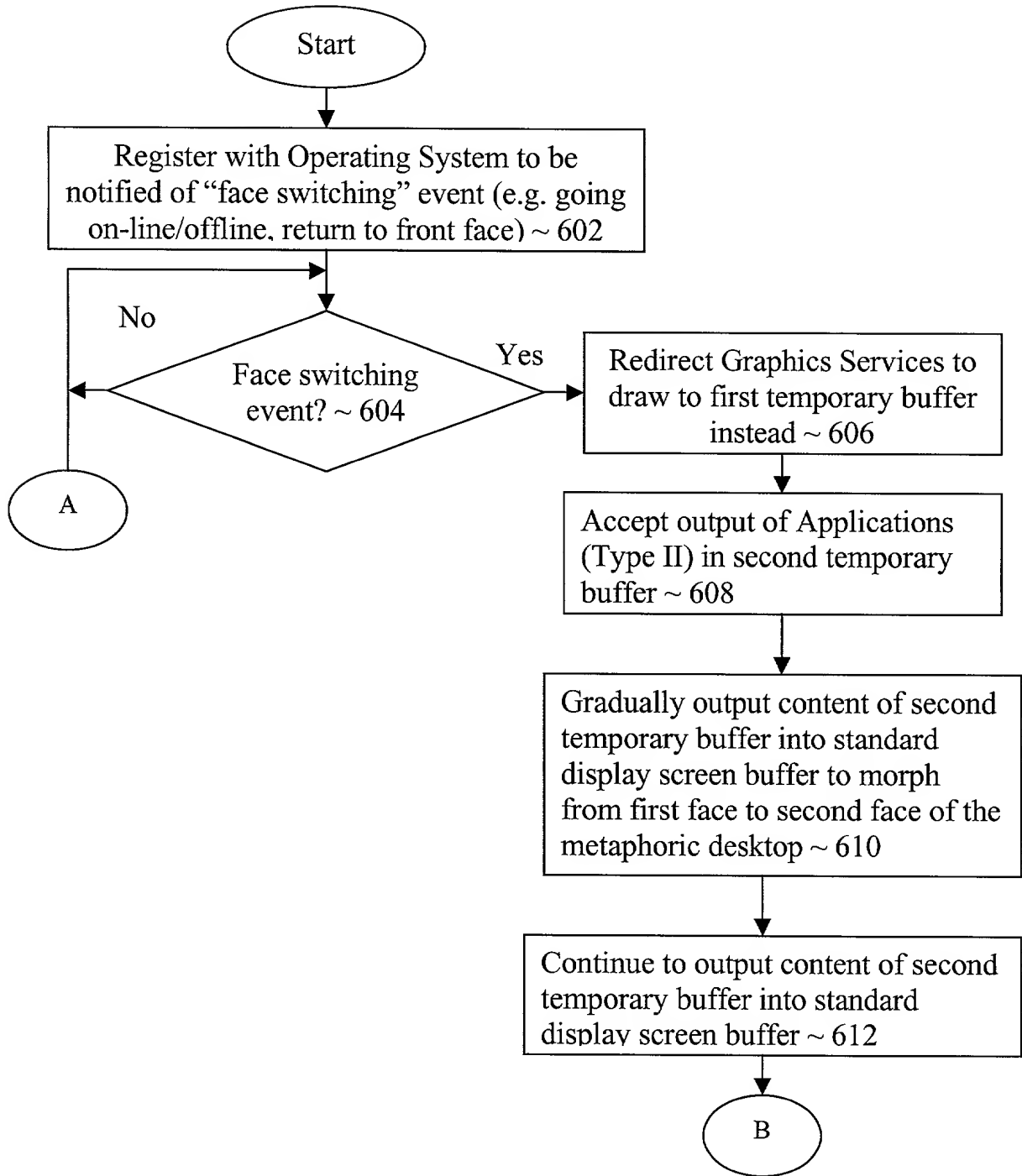
graph TD
    A([A]) --> B[Set current visible face of  
Metaphoric Desktop = First  
Face (e.g. Front Face) ~ 402]
    B --> C[Display execution results/contents of  
Type I Applications (e.g. local) on  
the First Face ~ 404]
    C --> D{Pre-determined  
Event, e.g. Going  
On-line? ~ 406}
    D -- No --> C
    D -- Yes --> E[Set current visible face of  
Metaphoric Desktop = Second  
Face (e.g Back Face) ~ 408]
    E --> F[Additionally display execution  
result/contents of Type II Applications (e.g.  
on-line) on the Second Face ~ 410]
    F --> G[Morph Metaphoric Desktop to  
current visible face (i.e. from First  
Face to Second Face) ~ 412]
    G --> A
  
```

**Figure 4a**

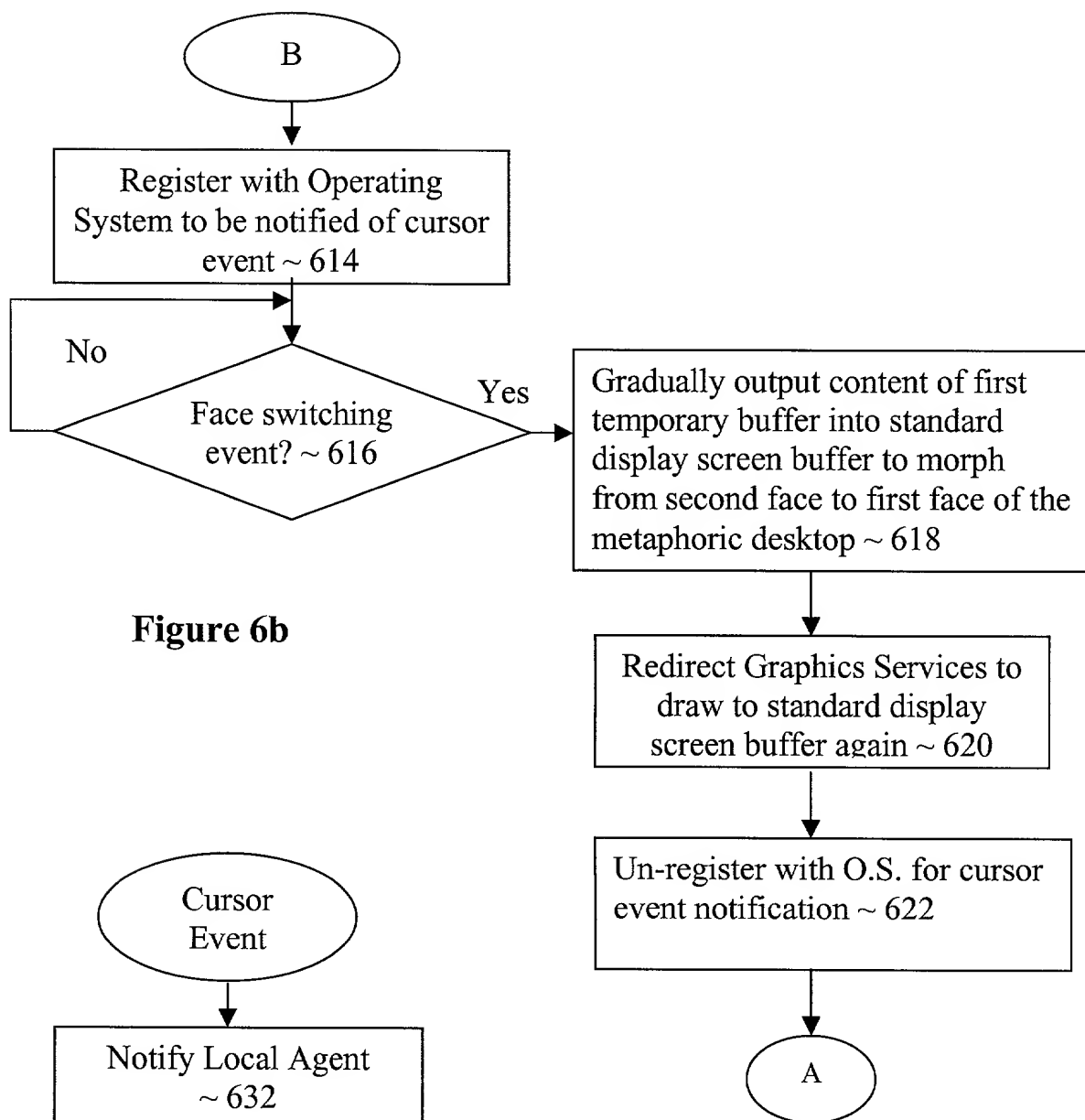


**Figure 4b**



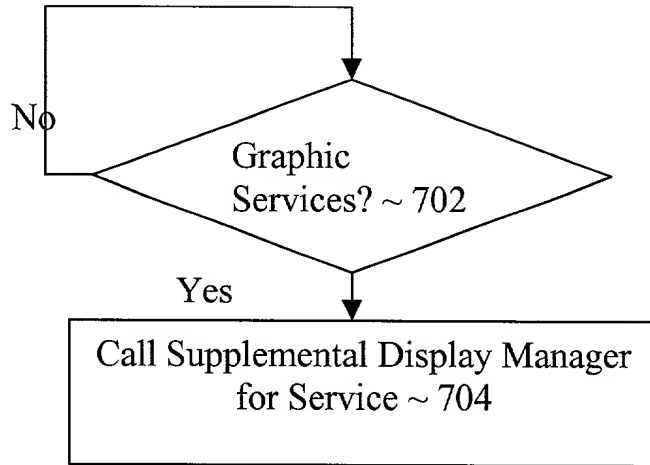


**Figure 6a**

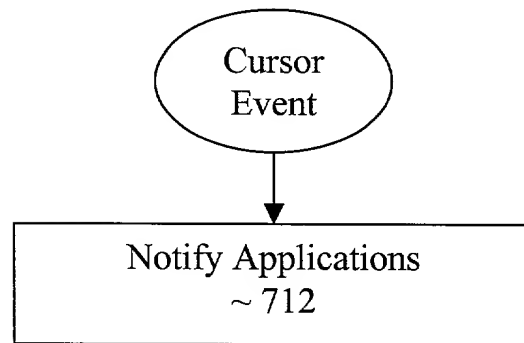


**Figure 6b**

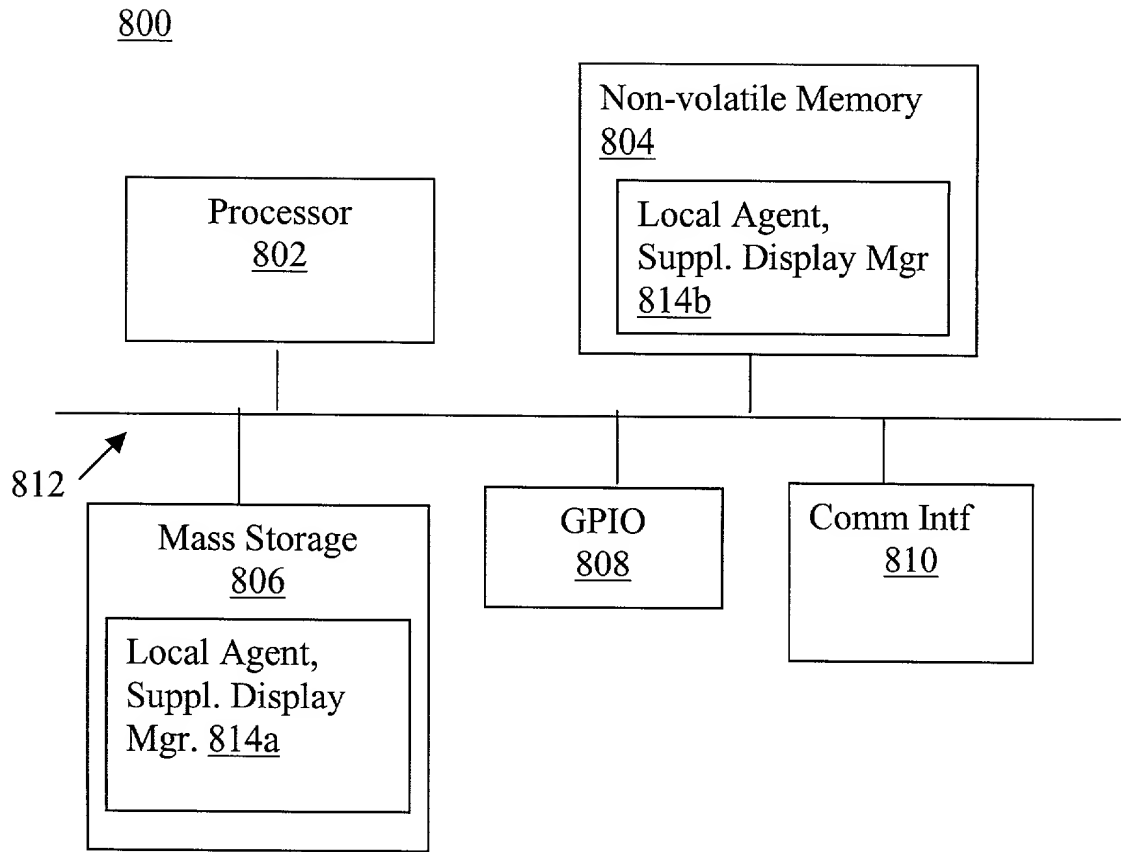
**Figure 6c**



**Figure 7a**



**Figure 7b**



**Figure 8**

PATENT

-1-

Sensitivity analysis	
Excluding 1990-1991	0.12
Excluding 1991-1992	0.12
Excluding 1992-1993	0.12
Excluding 1993-1994	0.12
Excluding 1994-1995	0.12
Excluding 1995-1996	0.12
Excluding 1996-1997	0.12
Excluding 1997-1998	0.12
Excluding 1998-1999	0.12
Excluding 1999-2000	0.12
Excluding 2000-2001	0.12
Excluding 2001-2002	0.12
Excluding 2002-2003	0.12
Excluding 2003-2004	0.12
Excluding 2004-2005	0.12
Excluding 2005-2006	0.12
Excluding 2006-2007	0.12
Excluding 2007-2008	0.12
Excluding 2008-2009	0.12
Excluding 2009-2010	0.12
Excluding 2010-2011	0.12
Excluding 2011-2012	0.12
Excluding 2012-2013	0.12
Excluding 2013-2014	0.12
Excluding 2014-2015	0.12
Excluding 2015-2016	0.12
Excluding 2016-2017	0.12
Excluding 2017-2018	0.12
Excluding 2018-2019	0.12
Excluding 2019-2020	0.12
Excluding 2020-2021	0.12
Excluding 2021-2022	0.12
Excluding 2022-2023	0.12
Excluding 2023-2024	0.12
Excluding 2024-2025	0.12
Excluding 2025-2026	0.12
Excluding 2026-2027	0.12
Excluding 2027-2028	0.12
Excluding 2028-2029	0.12
Excluding 2029-2030	0.12
Excluding 2030-2031	0.12
Excluding 2031-2032	0.12
Excluding 2032-2033	0.12
Excluding 2033-2034	0.12
Excluding 2034-2035	0.12
Excluding 2035-2036	0.12
Excluding 2036-2037	0.12
Excluding 2037-2038	0.12
Excluding 2038-2039	0.12
Excluding 2039-2040	0.12
Excluding 2040-2041	0.12
Excluding 2041-2042	0.12
Excluding 2042-2043	0.12
Excluding 2043-2044	0.12
Excluding 2044-2045	0.12
Excluding 2045-2046	0.12
Excluding 2046-2047	0.12
Excluding 2047-2048	0.12
Excluding 2048-2049	0.12
Excluding 2049-2050	0.12
Excluding 2050-2051	0.12
Excluding 2051-2052	0.12
Excluding 2052-2053	0.12
Excluding 2053-2054	0.12
Excluding 2054-2055	0.12
Excluding 2055-2056	0.12
Excluding 2056-2057	0.12
Excluding 2057-2058	0.12
Excluding 2058-2059	0.12
Excluding 2059-2060	0.12
Excluding 2060-2061	0.12
Excluding 2061-2062	0.12
Excluding 2062-2063	0.12
Excluding 2063-2064	0.12
Excluding 2064-2065	0.12
Excluding 2065-2066	0.12
Excluding 2066-2067	0.12
Excluding 2067-2068	0.12
Excluding 2068-2069	0.12
Excluding 2069-2070	0.12
Excluding 2070-2071	0.12
Excluding 2071-2072	0.12
Excluding 2072-2073	0.12
Excluding 2073-2074	0.12
Excluding 2074-2075	0.12
Excluding 2075-2076	0.12
Excluding 2076-2077	0.12
Excluding 2077-2078	0.12
Excluding 2078-2079	0.12
Excluding 2079-2080	0.12
Excluding 2080-2081	0.12
Excluding 2081-2082	0.12
Excluding 2082-2083	0.12
Excluding 2083-2084	0.12
Excluding 2084-2085	0.12
Excluding 2085-2086	0.12
Excluding 2086-2087	0.12
Excluding 2087-2088	0.12
Excluding 2088-2089	0.12
Excluding 2089-2090	0.12
Excluding 2090-2091	0.12
Excluding 2091-2092	0.12
Excluding 2092-2093	0.12
Excluding 2093-2094	0.12
Excluding 2094-2095	0.12
Excluding 2095-2096	0.12
Excluding 2096-2097	0.12
Excluding 2097-2098	0.12
Excluding 2098-2099	0.12
Excluding 2099-2100	0.12
Excluding 2100-2101	0.12
Excluding 2101-2102	0.12
Excluding 2102-2103	0.12
Excluding 2103-2104	0.12
Excluding 2104-2105	0.12
Excluding 2105-2106	0.12



(Application Number)

Filing Date

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Number)

Filing Date

(Status -- patented,  
pending, abandoned)

(Application Number)

Filing Date

(Status -- patented,  
pending, abandoned)

I hereby appoint Aloysius T. C. AuYeung, Reg. No. 35,432; Robert A. Diehl, Reg. No. 40,992, Jason K. Klindtworth (Reg. No. P47,211) and Robert T. Watt (Reg. No. 45,890) my patent attorney/agent; with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

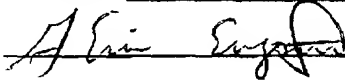
Send correspondence to Aloysius T.C. AuYeung,  
(Name of Attorney or Agent)

Columbia IP Law Group, LLC, 4900 SW Meadows Rd., Suite 109, Lake Oswego, OR 97035.  
and direct telephone calls to Aloysius T.C. AuYeung, (503) 534-2800.  
(Name of Attorney or Agent)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of **Second** Inventor Eric Engstrom

Inventor's Signature



Date

11/20/00

Residence

Kirkland, Washington  
(City, State)

Citizenship

USA

(Country)

Post Office Address

12415 Holmes Pt. Dr., NE  
Kirkland, Washington 98033

Full Name of Sole/First Inventor Jeffrey G. Ort

09718970 440000

1. General information	
1.1. Name of the project	...
1.2. Date of the report	...
1.3. Author	...
1.4. Reviewer	...
1.5. Date of the review	...
1.6. Date of the report	...
1.7. Date of the review	...
1.8. Date of the report	...
1.9. Date of the review	...
1.10. Date of the report	...
1.11. Date of the review	...
1.12. Date of the report	...
1.13. Date of the review	...
1.14. Date of the report	...
1.15. Date of the review	...
1.16. Date of the report	...
1.17. Date of the review	...
1.18. Date of the report	...
1.19. Date of the review	...
1.20. Date of the report	...
1.21. Date of the review	...
1.22. Date of the report	...
1.23. Date of the review	...
1.24. Date of the report	...
1.25. Date of the review	...
1.26. Date of the report	...
1.27. Date of the review	...
1.28. Date of the report	...
1.29. Date of the review	...
1.30. Date of the report	...
1.31. Date of the review	...
1.32. Date of the report	...
1.33. Date of the review	...
1.34. Date of the report	...
1.35. Date of the review	...
1.36. Date of the report	...
1.37. Date of the review	...
1.38. Date of the report	...
1.39. Date of the review	...
1.40. Date of the report	...
1.41. Date of the review	...
1.42. Date of the report	...
1.43. Date of the review	...
1.44. Date of the report	...
1.45. Date of the review	...
1.46. Date of the report	...
1.47. Date of the review	...
1.48. Date of the report	...
1.49. Date of the review	...
1.50. Date of the report	...
1.51. Date of the review	...
1.52. Date of the report	...
1.53. Date of the review	...
1.54. Date of the report	...
1.55. Date of the review	...
1.56. Date of the report	...
1.57. Date of the review	...
1.58. Date of the report	...
1.59. Date of the review	...
1.60. Date of the report	...
1.61. Date of the review	...
1.62. Date of the report	...
1.63. Date of the review	...
1.64. Date of the report	...
1.65. Date of the review	...
1.66. Date of the report	...
1.67. Date of the review	...
1.68. Date of the report	...
1.69. Date of the review	...
1.70. Date of the report	...
1.71. Date of the review	...
1.72. Date of the report	...
1.73. Date of the review	...
1.74. Date of the report	...
1.75. Date of the review	...
1.76. Date of the report	...
1.77. Date of the review	...
1.78. Date of the report	...
1.79. Date of the review	...
1.80. Date of the report	...
1.81. Date of the review	...
1.82. Date of the report	...
1.83. Date of the review	...
1.84. Date of the report	...
1.85. Date of the review	...
1.86. Date of the report	...
1.87. Date of the review	...
1.88. Date of the report	...
1.89. Date of the review	...
1.90. Date of the report	...
1.91. Date of the review	...
1.92. Date of the report	...
1.93. Date of the review	...
1.94. Date of the report	...
1.95. Date of the review	...
1.96. Date of the report	...
1.97. Date of the review	...
1.98. Date of the report	...
1.99. Date of the review	...
1.100. Date of the report	...

Title 37, Code of Federal Regulations, Section 1.56  
Duty to Disclose Information Material to Patentability

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) Prior art cited in search reports of a foreign patent office in a counterpart application, and
  - (2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.
- (b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and
- (1) It establishes, by itself or in combination with other information, a *prima facie* case of unpatentability of a claim; or
  - (2) It refutes, or is inconsistent with, a position the applicant takes in:
    - (i) Opposing an argument of unpatentability relied on by the Office, or
    - (ii) Asserting an argument of patentability.

A *prima facie* case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

- (1) Each inventor named in the application;
  - (2) Each attorney or agent who prepares or prosecutes the application; and
  - (3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.
- (d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor